

AMENDMENTS

In the Claims

The following is a marked-up version of the claims with the language that is underlined (“___”) being added and the language that contains strikethrough (“—”) being deleted:

1. (Currently Amended) A system for electrically isolating a portion of a wafer comprising:

a first wafer having a first side and an opposing second side;

a first conductor ~~formed at least partially~~ extending through said first wafer from said first side to said second side;

a first conductor insulating layer ~~formed at least partially~~ extending through said first wafer, said first conductor insulating layer engaging said first conductor and disposed between said first conductor and material of said first wafer, said first conductor insulating layer being formed of dielectric material; and

a first outer insulating layer ~~formed at least partially~~ extending through said first wafer from said first side to said second side and spaced from said first conductor insulating layer such that said first outer insulating layer at least partially electrically isolates said first conductor from portions of the first wafer located outside said first outer insulating layer, said first outer insulating layer being formed of dielectric material.

2. (Currently Amended) The system of claim 1, further comprising:

a second outer insulating layer ~~formed at least partially~~ through said first wafer from said first side to said second side and spaced from said first outer insulating layer such that said first outer insulating layer is arranged between said second outer insulating layer and said

first conductor insulating layer, said second outer insulating layer being formed of dielectric material.

3. (Original) The system of claim 1, further comprising:

a second conductor formed at least partially through said first wafer, said second conductor being arranged within an area at least partially bounded by said first outer insulating layer; and

a second conductor insulating layer formed at least partially through said first wafer, said second conductor insulating layer engaging said second conductor and disposed between said second conductor and material of said first wafer, said second conductor insulating layer being formed of dielectric material.

4. (Original) The system of claim 1, further comprising:

a second wafer at least partially overlying said first wafer;

a first conductor formed at least partially through said second wafer;

a first conductor insulating layer formed at least partially through said second wafer, said first conductor insulating layer of said second wafer engaging said first conductor of said second wafer and disposed between said first conductor of said second wafer and material of said second wafer, said first conductor insulating layer of said second wafer being formed of dielectric material; and

a first outer insulating layer formed at least partially through said second wafer and spaced from said first conductor insulating layer of said second wafer, said first outer insulating layer of said second wafer being formed of dielectric material;

said first conductor of said second wafer electrically communicating with said first conductor of said first wafer.

5. (Canceled)

6. (Currently Amended) The system of claim 6 1, further comprising:

a second outer insulating layer formed at least partially through said first wafer and spaced from said first outer insulating layer such that said first outer insulating layer is arranged between said second outer insulating layer and said first conductor insulating layer, said second outer insulating layer being formed of dielectric material.

7. (Original) The system of claim 6, further comprising:

a second conductor extending through said first wafer from said first side to said second side, said second conductor being arranged within an area at least partially bounded by said first outer insulating layer; and

a second conductor insulating layer formed at least partially through said first wafer, said second conductor insulating layer engaging said second conductor and disposed between said second conductor and material of said first wafer, said second conductor insulating layer being formed of dielectric material.

8. (Currently Amended) The system of claim 1, wherein said first wafer has ~~a first side, a second side opposing said first side, and a sidewall extending between said first side and said second side, wherein said first conductor extends through said first wafer from said first side to said second side,~~ and wherein said first outer insulating layer intersects said sidewall.

9. (Canceled)

10. (Currently Amended) The system of claim 9 1, further comprising:

a second wafer at least partially overlying said first wafer;

a first conductor ~~formed at least partially~~ extending through said second wafer;

a first conductor insulating layer formed at least partially through said second wafer, said first conductor insulating layer of said second wafer engaging said first conductor of said second wafer and disposed between said first conductor of said second wafer and material of said second wafer, said first conductor insulating layer of said second wafer being formed of dielectric material; and

a first outer insulating layer ~~formed at least partially~~ extending through said second wafer and spaced from said first conductor insulating layer of said second wafer, said first outer insulating layer of said second wafer being formed of dielectric material;

said first conductor of said second wafer electrically communicating with said first conductor of said first wafer.

11. (Currently Amended) The system of claim 10, wherein said second wafer has a first side, a second side opposing said first side, and a sidewall extending between said first side and said second side, wherein said first conductor of said second wafer extends through said second wafer from said first side to said second side, ~~and wherein said first outer insulating layer of said second wafer intersects said sidewall of said second wafer.~~

12. – 18. (Canceled)

19. (Newly Added) The system of claim 11, wherein said first outer insulating layer of said second wafer intersects said sidewall of said second wafer.

20. (Newly Added) A system comprising:

a first semiconductor wafer having a substrate material; and

a via structure adapted to provide electrical communication through the first wafer, the via structure comprising:

first and second conductors having insulating layers to form a barrier with the substrate; and

an outer insulating layer formed about both the first and second conductors to electrically isolate the first and second conductors from the substrate material.

21. (Newly Added) The system of claim 20 further comprising a second semiconductor wafer stacked to the first wafer, wherein the via structure provides electrical communication between the first wafer and the second wafer.

22. (Newly Added) The system of claim 20 further comprising a second semiconductor wafer in overlying relationship with the first wafer, wherein the second wafer comprises:

a via structure adapted to provide electrical communication through the second wafer, the via structure comprising:

first and second conductors having insulating layers to form a barrier with the substrate; and

a first outer insulating layer formed about both the first and second conductors to electrically isolate the first and second conductors from the substrate material.

23. (Newly Added) The system of claim 22 wherein the via structure of the first wafer propagates signals to the via structure of the second wafer.
24. (Newly Added) The system of claim 23 wherein the signals are selected from the group consisting of power signals and data signals.
25. (Newly Added) The system of claim 20 wherein the first and second conductors are electrically isolated from each other and from substrate material outside of the first outer insulating layer.
26. (Newly Added) The system of claim 20 wherein the via structure is adapted to provide electrical communication to various locations within the first wafer itself.
27. (Newly Added) The system of claim 26 wherein the electrical communication comprises a data signal.
28. (Newly Added) The system of claim 26 wherein the electrical communication comprises a power signal.
29. (Newly Added) The system of claim 20 further comprising a second outer insulating layer formed about the first outer insulating layer and about both the first and second conductors.

30. (Newly Added) A system, comprising:

a plurality of semiconductor wafers forming a wafer stack, each wafer comprising:

a substrate material; and

a via structure in the substrate material, the via structure providing electrical communication from one wafer to another wafer, each via structure comprising a first conductor having an insulating layer, a second conductor having an insulating layer and being electrically insulated from the first conductor, and an outer insulating layer formed around both the first and second conductors to electrically isolate the first and second conductors from the substrate material.

31. (Newly Added) The system of claim 30 wherein electrical signals propagate from the via structure of one wafer to the via structure of another wafer.

32. (Newly Added) The system of claim 30 wherein electrical signals propagate through one of the via structures from an outer surface of one wafer to a location defined between two wafers.

33. (Newly Added) The system of claim 30 wherein electrical signals propagate through the wafer stack through the via structure.